

Remarks

Response to Paragraph 2 Of Action: Reconsideration of the rejection of claims 1 and 2 is respectfully requested.

It is respectfully submitted that the combination would not be proper because of the teaching away described below. Initially, the rejection acknowledged that Monroe regulates the temperature of an attached wafer. Further, it is submitted that the same express purpose of Monroe is stated at C3, L 17 and 26, for example, as providing “a uniform temperature across a wafer” (L15) and at L26 as “a more uniform temperature across the entire surface of the carrier plate”. For this purpose, Monroe describes many separate coils 42 and 43, and shows a separate control circuit 47 (Fig. 3) for each coil 42 and 43. It is thus **important** for Monroe to be able to **separately control the energy applied to each coil** and thus to be applied to separate areas of the wafer.

In contrast, Hwang specifically applies **one** unfocused (broad or wide) energy radiation (C2, L42) to the **entire area** of the workpiece. Indeed, at C4, L1-3 Hwang emphasizes this concept by stating “...spread over the lead frame area as opposed to being focused on the ...chip”. This concept of unfocused energy applied to the entire workpiece (frame + chip) is opposite to the premise and teaching of Monroe’s separate coils for applying energy separately to different areas of the wafer. Hwang’s teaching of unfocused energy application to the entire workpiece is a teaching away from the express teaching of Monroe of separate coils for applying energy separately to different areas of the wafer. It is respectfully submitted that when the one reference teaches away in this manner, it is not proper to combine the references. Thus, withdrawal of this combination is requested.

In addition, it is respectfully submitted that the combination would not be proper because one would not be motivated to combine the Monroe and Hwang references. In review, Monroe teaches the importance of being able to separately control the energy applied to each coil and thus to be applied to separate areas of the wafer, and achieves that separate control by separate coils. By the proposed combination, Hwang would delete Monroe's separate energy inputs represented by the separate coils, such that this operation of Monroe would be lost by use of the unfocused energy of Hwang. Moreover, this use of Hwang would add a new requirement to the Monroe operations. In detail, in Hwang it is **essential** to have a **different sensitivity of the frame and chip to the unfocused energy of Hwang** (see C3, L59-62). However, this essential aspect of Hwang would not be applicable to Monroe for the following reason. It is respectfully submitted that it would be improper in CMP processing of semiconductor wafers to apply (to parts of the Monroe wafer for Hwang's energy transfer purposes) a new layer on the **wafer**. Whereas this essential use of the **different sensitivity of the frame and chip** to the unfocused energy of Hwang works in Hwang (as noted at C3, L59-62) by reason of the different responses of the chip and frame to the light energy used, Monroe only has the one wafer to CMP process. This Hwang requirement for different sensitivity, to achieve different thermal results, when applied to the Monroe wafer would oppositely discourage one from using Hwang's light in place of the Monroe coils 42/43. One therefore **would not be motivated** to combine Hwang and Monroe, because to achieve the combination while retaining the original characteristics of the Monroe wafer, the one wafer would have only one response to the Hwang light. With only one response to the Hwang light on the entire wafer, the benefits of the separate coils 42/43 of Monroe would be lost. Further, and in reverse, one also **would not be motivated** to combine Hwang and Monroe, because to achieve the combination while

retaining the **original benefits of the separate coils 42/43 of Monroe**, the one wafer of Monroe would have to be changed simply for thermal purposes and not for any reason related to the end-use of the wafer for making chips. It is respectfully submitted that the combination results in a choice between two equally unacceptable alternatives. It is respectfully submitted that the unacceptable nature of these choices is another proper reason as to why it is not proper to combine the references. Thus, withdrawal of the rejection based on this combination is respectfully requested.

Response to Paragraph 3 Of Action: Reconsideration of the rejection of claims 3-5, and 7-13 is respectfully requested.

It is respectfully submitted that the combination would not be proper because of (1) the teaching away described above in respect to two of the three references, and (2) the above-described lack of motivation to combine.

Further, because Hwang does not describe a wafer (but rather a chip in a special frame of a chip package), Hwang does not teach problems in wafer processing such as CMP, nor solutions to CMP problems in slurries used in CMP, and thus does not relate to subject matter that would motivate combination.

Moreover, beyond these three aspects described above with respect to Hwang combined with Monroe, as detailed below, Pandey et al (Pandey) teaches away from the Monroe objective and coil structure which establishes different thermal transfer conditions at separate areas of the wafer. In detail, Pandey only describes one thermal transfer temperature to the slurry (via the one transfer unit 65 that transfers thermal energy to all of the flows 61 at the same time and thus at the same temperature). As a result, with respect to combination with Monroe's separate thermal coils 42/43, Pandey's teaching is **of one same slurry temperature** of the slurry exiting from all four separate slurry outlets 61 shown in plan view in Fig. 7.

The teaching by Pandey of only one slurry temperature exiting **all of the outlets 61 to the wafer** would result in flows of the same temperature slurry past the separate Monroe coils 42/43 to the center of the wafer from the outlets 61. Moreover, such flows occur at the same time as the coils 42/43 are being separately controlled to maintain separate thermal transfer conditions at the separate areas defined by the coils 42/43. These four flows to the center would at least tend to overcome, if not actually overcome, an attempt, for example, by one separate coil 42 to reduce the temperature of one area if the slurry flow is at a higher temperature than the coil 42 is trying to maintain.

The result of Pandey **overcoming of Monroe's separate coil thermal conditions is opposite to the express teaching of Monroe** of the importance of separately controlling the energy applied to each coil 43, 42 and thus to be applied to each separate area of the wafer. Opposite to Monroe's separate control, the result of Pandey's same temperature slurry applied to all four sides of the wafer (Fig. 7) would be to make it more difficult for the Monroe coils 42/43 to achieve thermal transfer at the different areas of the wafer. This more difficult result makes it more difficult for Monroe to "deliver more uniform heat to..." the wafer (Monroe C2, L1-5).

This problem resulting from the use of Pandey with Monroe results from the object of Pandey, which is made clear at C9, L1-29 at which it is noted that the prior art, **and not Pandey**, "impedes (L16) flow of slurry S to the central area of the wafer surface WS" and "These drawbacks of conventional CMP ...are avoided in accordance with the present invention." (L28-29). Pandey thus teaches unimpeded flow to the center of the wafer of the same temperature slurry from each outlet 61, and teaches away from the Monroe control of thermal transfer separately at separate areas of the wafer.

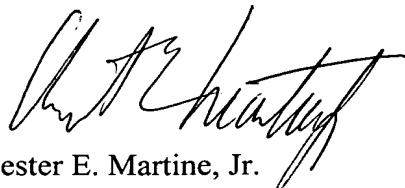
It is respectfully submitted that when the one reference Pandey teaches away from Monroe in this manner to overcome the effect of Monroe's separate coils 42, 43, it is not proper to combine the references. Thus, withdrawal of this three reference combination is respectfully requested.

Response to Paragraphs 4 and 5: Appreciation is expressed for the indication in paragraph 4 that claims 14 and 15 are allowable, and in paragraph 5 that claim 6 would be allowable if rewritten appropriately. In view of the remarks above in respect to claim 1 on which claim 6 is based, leave is respectfully requested to have those remarks reviewed by the Examiner before such rewriting is performed.

Should the Examiner have any questions concerning this matter, the undersigned can be reached at the telephone number set out below.

Respectfully submitted,

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